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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/636,484 | 08/10/2000 | Walter David Braddock IV | DB3 | 6691 |

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NEIFELD IP LAW, PC
CRYSTAL PLAZA 1, SUITE 1001
2001 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22202

EXAMINER

KANG, DONGHEE

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| ART UNIT | PAPER NUMBER |
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2811

DATE MAILED: 01/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/636,484

Applicant(s)

BRADDOCK, WALTER DAVID

Examiner

Donghee Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 and 36-55 is/are pending in the application.
- 4a) Of the above claim(s) 53-55 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-26, 37 and 39-52 is/are allowed.
- 6) ☒ Claim(s) 36 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Remarks

1. In view of the appeal brief filed on 14 November 2002, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Election/Restrictions

2. Applicant traverses the restriction requirement as set forth in Paper No.7. The traversal is on the ground(s) that the invention must be independent or distinct and there is no significant burden on the examiner and certainly no serious burden required by MPEP section 803. This is not found persuasive.

A restriction requirement between one set of product claims and a set of process claims was issued in the Office Action of paper No.7, mailed on 15 July 2002. "Section 121 [of Title 35 USC] permits a restriction for 'independent and distinct inventions', which the PTO construes to mean that the sets of claims must be drawn to separately patentable inventions." See *Applied Materials Inc. v. Advanced Semiconductor*

Materials 40 USPQ2d 1481, 1492 (Fed. Cir. 1996) (Archer, C.J., concurring in-part and dissenting in-part). A product and the process of making the product are “two independent, albeit related invention.” See *In re Taylor*, 149 USPQ 615, 617 (CCPA 1966). “When two sets of claims filed in the same application are patentably distinct or represent independent inventions, the examiner is to issue a restriction requirement.” See *In re Berg*, 46 USPQ2d 1226, 1233 n. 10 (Fed. Cir. 1998).

The examiner, in issuing a restriction requirement, must demonstrate “one way distinctiveness.” *Applied Materials Inc.* at 1492. As stated within the restriction requirement, “inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)).” In this application, the examiner restricted the product claims from the process claims on the grounds that “the product as claimed can be made by another and materially different process such as that forming a gate electrode on temporary substrate, forming a second layer on the gate electrode, forming a semiconductor wafer on the second layer, and then removing the temporary substrate.

In addition to one way distinctiveness, the examiner must show “why it would be a burden to examine both sets of claims.” *Applied Materials Inc.* at 1492. “A serious burden on the examiner may be prima facie shown if the examiner shows by appropriate explanation either separate classification, separate status in the art, or a different field of search.” MPEP 803. An explanation was provided in the restriction

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requirement is proper because the product claims and the process claims "have acquired a separate status in the art."

3. The criteria of distinctness and burdensomeness have been met, as demonstrated hereinabove. Accordingly, the requirement is still deemed proper and is therefore made FINAL.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the phrase "a complementary meal-oxide compound semiconductor integrated circuit " in claim 38 must be shown in Fig.1 or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims **36** is rejected under 35 U.S.C. 103(a) as being unpatentable over Passlack et al. (US5,945,718) in view of Kikkawa (US 6,121,153).

Passlack et al. teach an enhancement mode metal-oxide compound semiconductor field transistor comprising (Fig.1):

A compound semiconductor wafer structure (12) having an upper surface' a gate insulator structure (14) positioned on upper surface of said gate insulator structure; a gate electrode (17) positioned on upper surface of said gate insulator structure layer; source (21) and drain (22) ion implants self-aligned to the gate electrode; and source and drain ohmic contacts (19 & 20) positioned on ion implanted source and drain areas, wherein said compound semiconductor wafer structure comprises a AlGaAs (23) and InGaAs (24) layers positioned on said upper surface; and a substrate (11) on which resides said compound semiconductor wafer structure. See also Col.2, line 65 – Col.4, line 4.

Passlack et al. teach a GaAs substrate instead of InP substrate. However, Kikkawa teaches that one may use InP for the substrate in place of GaAs (Col.16, lines 5-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute GaAs substrate of Passlack with InP substrate as taught by Kikkawa, since GaAs and InP both exhibits faster and more optimized speed/power performance.

Furthermore, one of ordinary skill in the art would have recognized that GaAs and InP would work equally well as a substrate material for various high speed devices, such as MISFET, HEMT or HBT.

The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v.*

Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol. "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art substitute InP for GaAs.

7. Claim **38** is rejected under 35 U.S.C. 103(a) as being unpatentable over Passlack.

Passlack teaches an enhancement mode metal-oxide compound semiconductor field effect transistor comprising (Fig.1):

a compound semiconductor wafer structure (12) having an upper surface; a gate insulator structure (14) positioned on said upper surface; a gate electrode (17) positioned on upper surface of said gate insulator structure layer; source (21) and drain (22) ion implants (19 & 20) positioned on ion implanted source and drain areas, wherein the compound semiconductor wafer structure comprises a wider band gap spacer layer

(23) and a narrower band gap channel layer (InGaAs, 24). See also Col.2, line 65 – Col.4, line 4.

Passlack in Fig.1 does not show that transistor is integrated together with similar and complementary transistor devices to form complementary metal-oxide compound semiconductor integrated circuit. However, it is well known to form complementary MOS transistors (CMOS) which are used generally in various devices of LSI constitution including memory LSIs and logic LSIs since they have advantageous features of low power consumption and high speed operation. This advantageous of complementary metal oxide semiconductor devices are well known in the art. Note that Passlack also teaches complementary GaAs devices exhibit optimum speed/power performance and efficiency at a low supply voltage of 1 V and below (Col.1, lines 18-24).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate transistor together with similar and complementary transistor devices to form complementary metal-oxide compound semiconductor integrated circuit because of the well known advantages of CMOS configurations.

Response to Arguments

8. Applicant's arguments with respect to claim 36 have been considered but are moot in view of the new ground(s) of rejection.

9. Applicant's arguments filed 14 November 2002 have been fully considered but they are not persuasive. Applicant argues that Passlack's stoichiometric Ga_2O_3 does not respond to the limitation defined in claims 36 & 38 of "a gate insulator structure"

because the gate insulator structure recited in claims 36 & 38 as both electrically insulating and comprising at least two layers.

This is not convincing because Passlack clearly teaches a stoichiometric Ga_2O_3 is gate oxide layer (Col.2, lines 45-47). It is noted in the art that the gate oxide layer is electrically insulating.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., gate insulator structure comprising at least two layers) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 703-305-9147. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

dhk
January 24, 2003

Tom Thomas
SUPERVISOR
TECHNICAL STAFF